

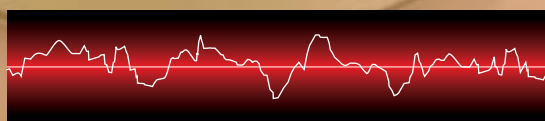
Mitutoyo

# Surftest SJ-201 P/M

## PORTABLE SURFACE ROUGHNESS TESTER



**Smart tool  
in the  
workshop**





# **SURFTEST** **SJ-201P/M**

## **PORTABLE SURFACE ROUGHNESS TESTER**

- Large characters are displayed on the large easy-to-view LCD.
- Portable for easy measurement anywhere necessary.
- The detector/drive unit can be detached from the display unit for effortless measurement of awkwardly oriented workpieces.
- Wide 350 $\mu$ m (-200 $\mu$ m to +150 $\mu$ m) measurement range.
- Roughness parameters compatible with ISO, DIN, ANSI, and JIS.
- 19 analysis parameters are provided, including the basic Ra, Rq, Rz, and Ry parameters.
- Customize function allows hiding of unnecessary parameters.
- GO/NG judgment on a desired parameter.
- Auto-calibration for simple gain-adjustment.
- Auto-sleep function saves energy.
- 10 Measurement data is retained in memory even after the power is turned off.
- Data output is available for SPC operation.
- RS-232C interface enables data transfer to computer or other devices using an external device.
- 2-way power system (AC adapter/rechargeable built-in battery).
- A dedicated carrying case is included for safe transport.
- A precision roughness specimen is supplied.
- Possible to printout the measurement data by the optional printer (178-420).



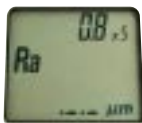


# **Ra, Rq, Ry, Rz, S, Sm, Pc, R3z, mr, Rt, Rp, Rk, Rpk, Rvk, Mr1, Mr2, A1, A2, Vo** **19 Surface Roughness Parameters Compatible with**

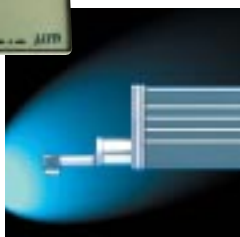
## **ISO/DIN/ANSI/JIS**

### **Measurement:**

Pressing the [START/STOP] key in the measurement mode starts the detector measurement traversing. Measurement traversing indicator "---" on the LCD turns out into the parameter value display if measurement is complete. Measurement traversing length can be set according to a national/ international standard or to an arbitrary length.



Measuring



### **Ra, Rq, Ry, and Rz Plus Eleven More Parameters:**

Seven more analysis/display parameters can be set up in addition to the factory default parameters Ra, Rq, Ry, and Rz. After measurement, press the [PARAMETER] key repeatedly until the desired one is displayed on the LCD.



Parameter  
Ra value  
being  
displayed

### **Parameter Reduction:**

Parameter calculations and resultant display can be limited only to those actually required. Reducing the parameters simplifies the key operation and parameter calculations.



GO/NG  
judgment

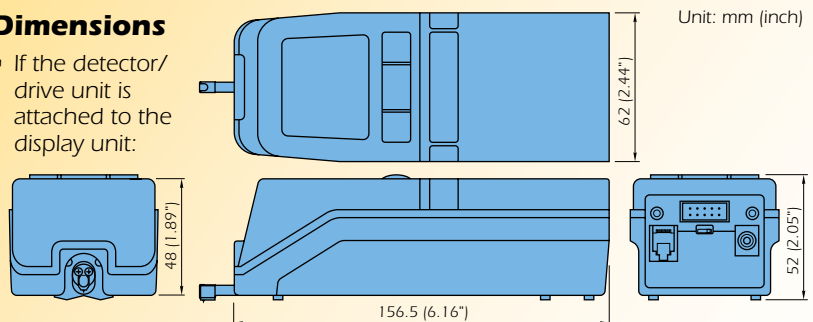
### **Calibration Mode:**

Pressing the [CAL/STD/ RANGE] key in the measurement mode, the calibration mode is entered allowing the detector to be calibrated to the precision roughness specimen with simple key operation.

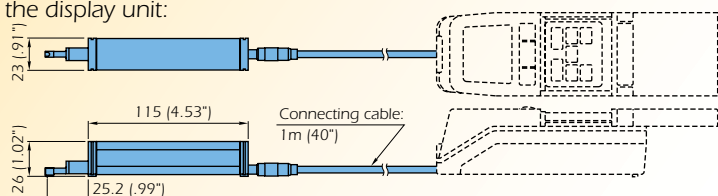


### **Dimensions**

- If the detector/ drive unit is attached to the display unit:



- If the detector/drive unit is detached from the display unit:





## Setting Modification Keys:

The top cover of the display unit slides to allow access to the setting modification keys underneath.

## REMOTE Key for Data Output:

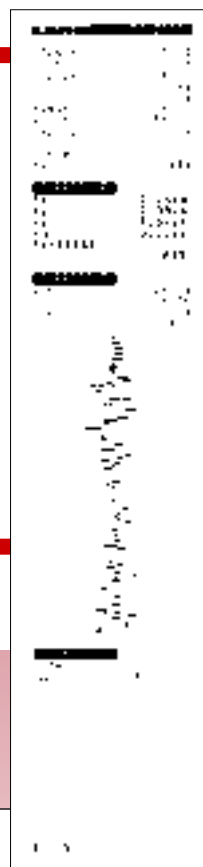
To use the RS232C cable, it is possible to connect the printer to print the measured profile.

It is also possible to connect PC by changing the cable.



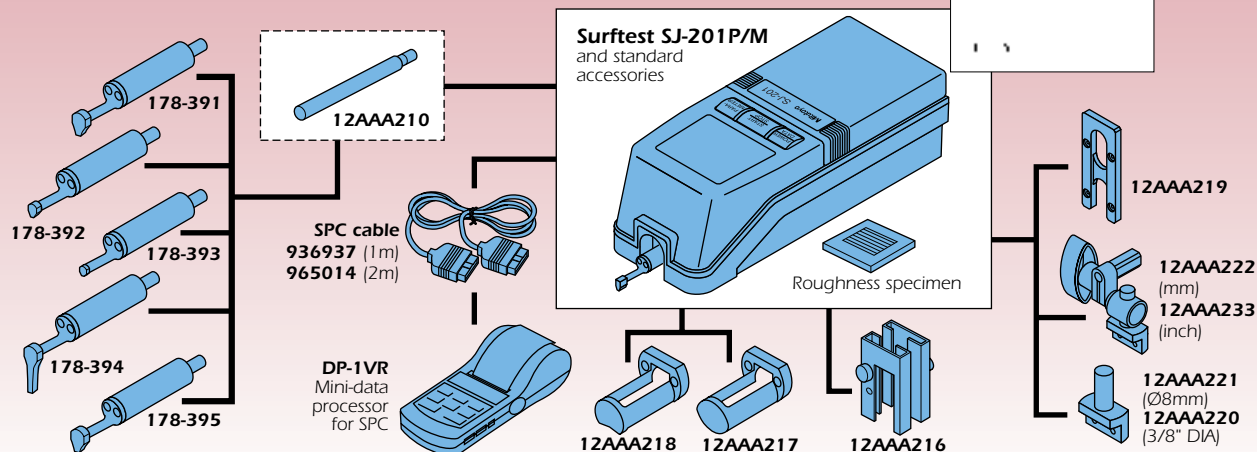
## SPC Data Output and Communication:

The SJ-201 is provided with functions to output SPC data and communicate with external devices via the RS-232C interface.



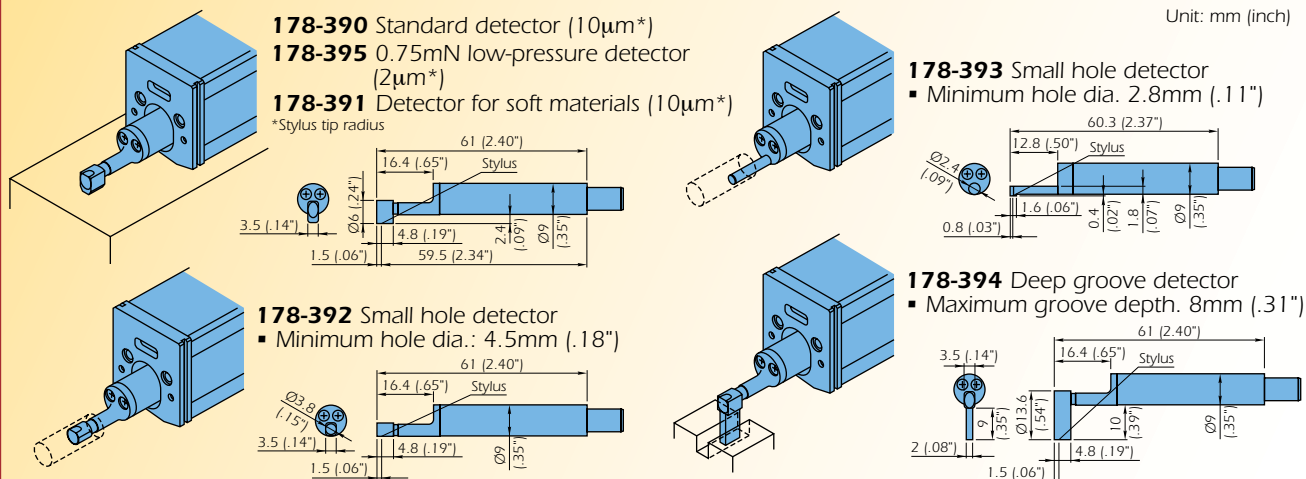
# APPLICATIONS

Various optional accessories widen the application range of measurements.



## DETECTORS

Select a detector appropriate for the material and shape of the workpiece to be measured.





## SJ Printer\* (option)

Compact sized "SJ printer" (178-420) prints out the measurement data at high speed and high quality. It is easy to carry and no harmful to mobility due to using the built-in battery.

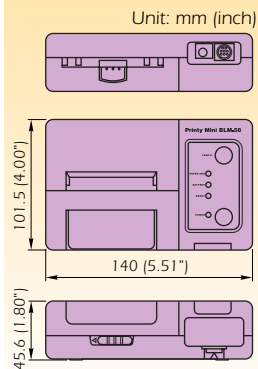
\* SJ-201M type is not able to be connected.

## SPECIFICATIONS

Code No.*	178-420
Measurement item	Measurement condition, calculation result, profile, BAC curve (selectable)
Printing method	Thermosensitive line dot
Data entering method	RS-232C method
Dot density	8 dot/mm
Total dot	384 dot
Maximum printing speed	50mm/sec
Printing/recording width	48mm/58mm
Printing paper dia	ø30mm
Dimension (W/XHxD)	140 X 45.6 X 101.5mm/5.51" X 1.80" X 4.00"
Mass	1.5kg
Battery	Internal battery: DC7.5V lithium ion battery AC adapter: DC8.5V multi battery
Accessories	AC adapter, battery pack, connecting cable, printing paper 20 roll (12AAC243)

\* To denote your Ac line voltage add the following suffixes.  
A for 120V, D for 230V, E for 240V. No suffix is required for 100V.

## Printer Dimension



Measurement in the horizontal direction.

Height Gage Adapter  
12AAA222

The bottom of the detector has V-grooves for stable measurement of cylindrical workpieces.



## Support foot set (pair) 12AAA216

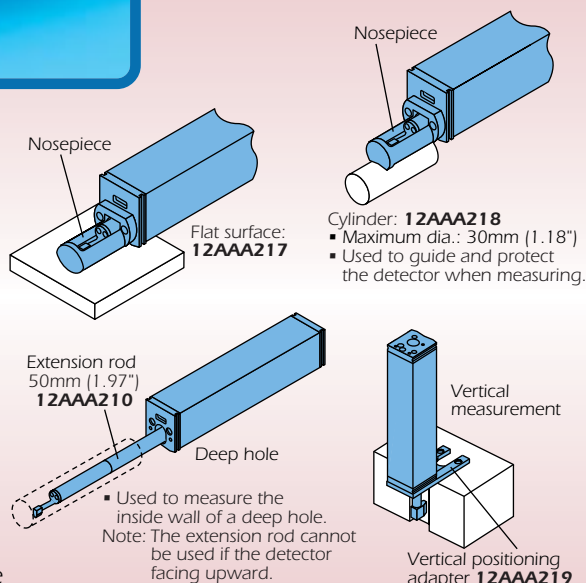
- Adjustable height: 28mm (1.1")



Measurement in the vertical direction.

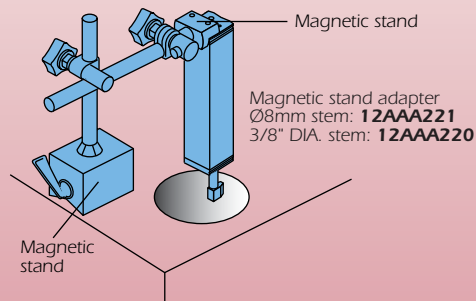
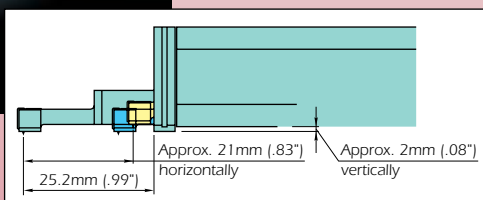
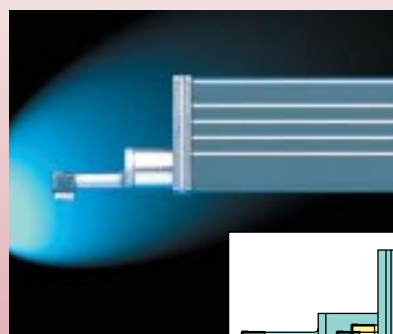


Measurement with the detector facing upward.



## Detector Retracting Function:

If moving the SJ-201 or if it will not be used for a long period of time, the detector retracting function prevents damage to the detector caused by the tip being accidentally hit.



## SJ-201P SPECIFICATIONS

Order No.*1	178-920	178-923	178-930	178-933
Type	mm	inch/mm	mm	inch/mm
<b>Drive Unit</b>				
Drive speed	Measuring: 0.25mm/s (.01"/s), 0.5mm/s, (.02"/s) Returning: 0.8mm/s (.03"/s)			
Evaluation length	12.5mm/.49"			
Mass	190g (.42 lbs.)			
<b>Detector provided</b>	<b>178-390</b>		<b>178-395</b>	
Detecting method	Differential inductance			
Measuring range	350μm/13780μin (-200μm/-7880μin to +150μm/+5900μin)			
Material of stylus	Diamond			
Radius of skid curvature	40mm (1.57")			
Mass	18g (.04 lbs.)			
Stylus tip radius	5μm (200μin)		2μm (80μin)	
Measuring force	4mN		0.75mN	
<b>Display Unit</b>				
Assessed profile	Primary profile (P), Roughness profile (R), DIN4776 profile			
Roughness parameter	Ra, Ry, Rz, Rq, S, Sm, Pc, R3z, mr, Rt, Rp, Rk, Rpk, Rvk, Mr1, Mr2, A1, A2, Vo (can be customized)			
Roughness standard	JIS, DIN, ISO, ANSI			
Sampling length (L)	0.25mm, 0.8mm, 2.5mm		0.25mm, 0.8mm, 2.5mm (.01", .03", .1")	
Number of sampling spans	x1, x3, x5, xL*2			
Digital filter	2CR-75% (without phase compensation), PC-75%, PC50% (Gaussian)			
Cut-off λc	0.25mm, 0.8mm, 2.5mm		0.25mm, 0.8mm, 2.5mm (.01", .03", .1")	
length λs	2.5μm, 8μm		2.5μm, 8μm (100μin, 320μin)	
Resolution/range	Auto/depending on the measurement range 0.4μm/350μm 0.1μm/100μm 0.05μm/50μm 0.01μm/10μm		Auto/depending on the measurement range 0.4μm/350μm (16.4μin/14000μin) 0.1μm/100μm (4.1μin/4000μin) 0.05μm/50μm (2.0μin/2000μin) 0.01μm/10μm (.5μin/400μin)	
Displaying range	Ra, Rq	0.01μm - 100μm		0.01μm - 100μm (.4μin - 4000μin)
	Rz, Ry, Rp, Rt,	0.02μm - 350μm		0.02μm - 350μm
	R3z,Rk, Rpk, Rvk			(.8μin - 14000μin)
	Pc	2.5 - 5000/cm		2.5 - 5000/cm (6.35 - 12700/inch)
	mr	1 - 100%		1 - 100%
	Sm, S	2 - 4000μm		2 - 4000μm (80μin - .16")
	Mr1, Mr2	0 - 100%		
	A1, A2	0 - 15000		
	Vo	0.000 - 10.00(mm³/cm²)		
GO/NO-GO judgment	Upper and lower limit values can be specified.			
Power supply	Via AC adapter/built-in rechargeable battery			
Rechargeable battery	Charging time: 12 hours (for 500 measurements)			
Auto-sleep (turning off)	After 30 seconds without operation			
Data output	Via RS-232C interface unit, SPC output, PC output, Printer output			
Mass	290g (.64 lbs.)			

\*1 To denote your AC line voltage add the following suffixes (e.g. **178-920A**). **A** for 120V, **K** for 110V, **D** for 230V, **E** for 240V, **No suffix** is required for 100V.

\*2 Evaluation length can be specified arbitrarily in the range from 0.3mm (.01") to 12.5mm (.49").

## STANDARD ACCESSORIES

- 12BAA303** Connecting cable (1m)
- 178-601** Roughness specimen (mm)\*
- 178-602** Roughness specimen (inch/mm)\*
- \*Either of them supplied.
- 353134** Calibration stand
- 538612** Phillips screwdriver
- 12BAA304** Carrying case
- 99MBB079A** User's manual (for SJ-201P)
- 99MBB080A** User's manual (for SJ-201M)
- 99MBB081A** One-sheet manual
- 526688** AC adapter



Roughness specimen

## OPTIONAL ACCESSORIES

- 178-390** Standard detector (ø5µm)
- 178-391** Detector for soft materials (Stylus tip radius: 10µm)
- 178-392** Small hole detector (ø4.5mm)
- 178-393** Small hole detector (ø2.8mm)
- 178-394** Deep groove detector
- 178-395** Detector for low pressure type (Stylus tip radius: 2µm, Measuring force: 0.75mN)
- 936937** SPC cable (1m)
- 965014** SPC cable (2m)
- 12AAA208** RS-232C connecting cable
- 12AAA216** Support foot set (pair)
- 12AAA217** Nosepiece for flat surface
- 12AAA218** Nosepiece for cylindrical surface
- 12AAA219** Vertical positioning adapter
- 12AAA220** Magnetic stand adapter (3/8" DIA. stem)
- 12AAA221** Magnetic stand adapter (Ø8mm stem)
- 12AAA222** Height gage adapter
- 12AAA210** Extension rod (50mm)
- 178-033** Setting attachment: V type
- 178-034** Setting attachment: Slider type
- 178-035** Setting attachment: Inside diameter type
- 178-420\*1** Printer (with connecting cable)
- 12AAC243** Printer paper (20 roll)
- 178-241-2\*1** Display unit for SJ-301

\*1 To denote your AC line voltage add the following suffixes. **A** for 120V, **D** for 230V, **E** for 240V and **No suffix** is required for 100V.



## SJ-201M SPECIFICATIONS

Order No.	178-920F	178-930F
Type	mm	mm
<b>Display Unit</b>		
Assessed profile	Primary profile (P), Roughness profile (R), Motif (CnO) switchable	
Roughness parameter	Ra, Ry, Rz, Rq, S, Sm, Pc, R3z, mr, Rt, Rp, R, Rx, AR (can be customized)	
<b>Power supply</b>	Via AC adapter (230V)/built-in rechargeable battery	

Note: Other specifications are the same as the SJ-201P

**Mitutoyo**  
PRECISION IS OUR PROFESSION



Specifications are subject to change without notice.

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